

We claim:

1. An analyte screening system, comprising:

a sensor array comprising a plurality of different differentially responsive sensors, having a first signal profile produced by the plurality of different differentially responsive sensors, when contacted with a first analyte and a second different signal profile produced when contacted with a second analyte, wherein the difference between the first signal and the second signal being indicative of a difference in the property or properties of the first analyte and second analyte;

a measuring device, connected to the sensor array; and

a computer;

the measuring device detecting a signal in each of the plurality of different differentially responsive sensors and the computer assembling the signal into a sensor array signal profile;

wherein the computer is operative to compare the sensor array signal profile to at least one previously obtained signal profile indicating a standard sample having a specific activity, chemical or physical property, or function, wherein the comparison of the sensor array signal profile to the at least one previously obtained signal profile is indicative of a specific activity, chemical or physical property, or function of the analyte.

2. The system of claim 1, wherein the analyte comprises a chemical.

3. The system of claim 2, wherein the analyte comprises a chemical.

4. The system of claim 3, wherein the biochemical is selected from the group consisting of a lipid, hormone, fatty acids, nucleic acid, polypeptide, and carbohydrate.

5. The system of claim 4, wherein the polypeptide is selected from the group consisting of an antibody, enzyme, and protein.

6. The system of claim 5, wherein the antibody is a monoclonal antibody, polyclonal antibody, humanized antibody, or fragments thereof.

7. The system of claim 5, wherein the enzyme is selected from the group consisting of lipases, esterases, proteases, glycosidases, glycosyl transferases, phosphatases, kinases, mono- and dioxygenases, haloperoxidases, lignin peroxidases, diarylpropane peroxidases, epoxide hydrolases, nitrile hydratases, nitrilases, transaminases, amidases, and acylases.

8. The system of claim 1, wherein the specific activity is selected from the group consisting of enzymatic activity, binding activity, inhibitory activity, and modulating activity;

9. The system of claim 1, wherein the signal profile of the standard sample is derived from a library.

10. The system of claim 9, wherein the library is generated by a neural network.

11. The system of claim 1, wherein the different differentially responsive sensors change optically, electrically, magnetically, mechanically, physically, or a combination thereof.

12. The system of claim 1, wherein the different differentially responsive sensors are selected from the group consisting of crystalline colloidal array (CCA) containing sensors, metal oxide sensors, dye-impregnated polymers coated onto beads of optically fibers, buld conducting organic polymers, capacitance sensors, chemically-sensitive resistor sensors, and combinations thereof.

13. The system of claim 12, wherein the chemically-sensitive resistor sensors are comprised of regions of a non-conductive material and regions of a conductive material compositionally different than the non-conductive material, each resistor providing an electrical path through the regions of conductive and non-conductive material, wherein interaction of the molecule with the resistor provides a change in resistance in the resistor.

14. The system of claim 1, wherein the chemical or physical property is selected from the group consisting of side groups, charge, hydrophobicity, polarity, molecular size or shape, and chirality.

15. The system of claim 1, wherein the different differentially responsive sensors are chemically sensitive resistors.